

Appl. No. 10/084,320
Amdt. Dated April 30, 2004
Reply to Office action of December 30, 2003

REMARKS/ARGUMENTS

Claims 1, 4, 5, 7-16 are pending in the application, with claims 14-16 having been withdrawn from consideration as being directed to a non-elected invention. In response, claims 14-16 are being deleted.

Claim 1 is being amended by introducing, in effect, the subject matter of claim 10 into claim 1. Consequently, claim 1 is now directed to an apparatus including first and second humidification units for first and second process gas streams. For each process gas stream, there is provided a heat exchanger for cooling it to a lower temperature to condense out excess moisture, a separator for removing that moisture and the respective first or second heater for reheating the process gas to a desired temperature.

It is also now specified that the first and second heat exchangers for the first and second process gas streams are arranged for heat to be removed therefrom by a common coolant supply.

This amendment has resulted in the renumbering of various components, with respect to the use of terms first, second, simply to ensure that these are introduced in the claims in a logical order and are used consistently. No new matter has been added.

Claim 4 has been amended to refer to the provision of an outlet line for at least one of each of the first and second process gas streams.

A new claim 17 has been added, roughly paralleling claim 7, to provide for a second temperature control circuit for the second heat exchanger. Similarly, new claim 18 parallels claim 8 and provides for another fluid heater for heating the second fluid. It is suggested these claims, when renumbered, be placed after claim 7.

New claim 19 is dependent from claim 9 and intended to follow this claim. Claim 19 is intended to parallel claim 9 and provides for a fourth heat exchanger and a fourth temperature control circuit, etc.

Appl. No. 10/084,320
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New claim 20 is directed to the feature of each of the third and fourth cooling circuits including respective third and fourth cooling means for cooling the fluid in their circuits. Additionally, it is provided that the coolant supply means is connected to the third and fourth cooling means, so that, overall, each of the first, second, third and fourth cooling means is cooled by coolant from the coolant supply means.

Claim 21 is directed to the feature of the respective fluids in the coolant being water, as is clearly disclosed in the application.

Finally, the reference to the supply of steam in the earlier claims has been revised to refer, slightly more generally, to "steam supply means". It can be noted that in the original claims Figure 1 at least is not in any sense limited to steam injection. Accordingly, it is submitted that no new matter has been added. The feature of the steam supply means comprising the steam injectors is introduced in new claim 22.

Turning to the Examiner rejection of the claims, the Examiner had rejected claims 1, 7 and 9 as being obvious under 35 U.S.C. 103(a) in view of the teachings on JP 5-256468 and Weitman. This rejection is respectfully traversed.

More specifically, it is noted that, in view of amendments to claim 1, this claim is submitted to be now clearly distinguished from these references.

The Examiner had also rejected claim 10, the claim which previously introduced the feature of the second process gas stream, in view of the prior art applied to claim 1 and further in view of JP 9-35737. In summary, the Examiner had argued that to duplicate the system of claim 1 for as many process gas streams as desired would have been obvious to one of ordinary skill in the art, and referred to JP 9-35737 for disclosing the provision of two humidifiers, one for the oxidizing gas and one for the fuel.

It is submitted that the humidification structure and apparatus now defined is in no way disclosed, nor obvious, in view of the various references, however combined.

Firstly, it is noted that the Examiner's primary reference JP 5-256468 and also Weitman are both concerned with a wholly different humidification problem. The Japanese reference is concerned with the supply of clean air for a clean room for manufacturing semi-conductors, while Weitman is concerned with the treatment of

Appl. No. 10/084,320
Amdt. Dated April 30, 2004
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contaminated gases. Neither reference is concerned with the problem of controlled humidification of process gases for a fuel cell, where two such humidified gas streams are required.

While JP '468 may be concerned with a fuel cell structure, it is submitted that the Examiner has failed to establish a proper *prima face* case of obviousness and that there is no reason or basis in this art for the proposed combination. The JP '468 reference is concerned with the specific characteristics of plate-type fuel cells, where plate-type humidifiers are attached to the end of a fuel cell stack. It is not seen how any of the humidification schemes recited in the Examiner's first two references could in any way be incorporated into the teachings of JP '468, or vice versa.

A further significant feature in claim 1 is that it is provided with a common coolant supply for removing heat from the first and second heat exchangers. No such feature is found in any of these references.

The Examiner had further rejected claims 4 and 5 as being unpatentable over the prior art applied to claim 1 and further in view of Ebbing et al. or Othmer. While these two references may be concerned with heating the fluids in a pipe, they are concerned with a wholly different art and pipes of a quite different scale. It is submitted that in view of the different art area, there is absolutely no reason or basis to consider combining the references in the manner suggested by the Examiner, and accordingly that claims 4 and 5 are allowable.

With respect to claim 8, the Examiner further relied upon the disclosure in Oswalt et al. to argue that this claim is obvious. Again, it is submitted that the Examiner is arriving at a wholly artificial combination of features, for which there is no reason or basis in the art. Oswalt et al. is concerned with a precision-controlled water chiller, and not in any sense concerned with the fuel cell art or humidification, so that it is submitted that claim 8 is not in fact obvious.

Comments have been provided above on the rejection of claim 10, now effectively incorporated into claim 1. With respect to claims 11 and 12, it is submitted these claims are allowable for introducing further patentable features and also being dependent from allowable claims.

Appl. No. 10/084,320
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Again, the Gunter reference is concerned with a wholly different field, namely apparatus for preparing a cocoa concentrate, and accordingly there is no reason or basis for the combination proposed by the Examiner.

With respect to claim 12, the Examiner argued that duplication of the various elements would have been obvious in view of the teachings of JP 9-36737. Again, while this reference may show separate humidifiers, it does not show duplication of features specified in claim 12, and accordingly it is submitted that claim 12 is allowable.

Finally, with respect to claim 13, this claim has been deleted.

Accordingly, it is submitted that the claims as amended are in condition for allowance, and early allowance is requested.

Respectfully submitted,

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Attachments

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